SECTION VII.—WEATHER AND DATA FOR THE MONTH.

THE WEATHER OF THE MONTH.

By P. C. DAY, Climatologist and Chief of Division.

Pressure.—The distribution of the mean atmospheric pressure over the United States and Canada, and the prevailing direction of the winds, are graphically shown on Chart VII, while the average values for the month at the several stations, with the departures from the normal, are shown in Tables I and III.

For the month as a whole the barometric pressure was low over nearly all portions of the country, the most marked minus departures occurring in the lower Missouri Valley, Kansas, northern California, and the western portions of Oregon and Washington. The only portions of the country where the pressure averaged above the normal were the New England and Middle Atlantic States, the lower Lake region, western Colorado and northern New Mexico, the plus departures in the northern New England States were rather marked.

The month opened with relatively high pressure over all districts except the upper Lake region and the extreme north Pacific slope where moderately low pressure prevailed. From the 5th–8th a trough of low pressure extending from Canada to northern Texas moved from the Rocky Mountain region eastward, and during the next few days an extensive area of high pressure prevailed over the Central Valleys and to the eastward, which in turn was followed during the first few days of the second decade by another trough of low pressure extending from Canada to the Gulf. A succession of low pressure areas emanating in the extreme Northwest and far Southwest, passed eastward and northeastward, causing nearly continuous cloudy or rainy weather during the greater portion of the last half of the month, throughout the Central Valleys and eastern section of the country.

The distribution of the highs and lows was generally favorable for northerly winds over the northern districts from the Rocky Mountains eastward to the Atlantic, and from a southerly or southeasterly direction over the west Gulf and Pacific Coast States. Elsewhere variable winds prevailed.

Temperature.—With the opening of the year temperatures were near the normal in most districts, with a general tendency to warmer weather. Moderate winter weather continued throughout most of the first decade and the average temperature for this period was normal or above in nearly all districts. Over the Middle Plains region the period was very generally warmer than the average throughout, the excess above the normal being as much as 8° in portions of Kansas.

No decided temperature changes occurred during the second decade until after the middle, when considerably colder weather overspread the central and southern districts and freezing temperatures extended into the Gulf States and portions of the far Southwest, and frosts occurred in northern Florida. Over the northern and central districts, however, from the Rocky Mountains eastward, moderate weather continued, as a rule, and the average temperature for the decade was well above the normal, the excess in some cases amounting to more than 10°.

With the beginning of the third decade a tendency to colder weather was apparent in the western mountain districts, which extended southeastward during the following few days and by the 24th and 25th had overspread the west Gulf States with freezing weather to the coast line. Cold weather continued at the same time over much of the Mountain and Plateau regions, and in the northern districts from the upper Lakes westward.

By the 27th the cold over the Northwest had become severe, the minimum temperature falling to 40° or more below zero at points in North Dakota and Minnesota. This cold wave rapidly overspread the central valleys and Lake region during the following day, with minimum temperatures more than 50° below zero near the northern shore of Lake Superior. During the closing days of the month the cold area extended eastward to the Atlantic coast, but lost much of its severity, except in portions of New England and northern New York, where minimum temperatures from 20° to 30° below zero occurred. Much warmer weather overspread the western districts about the 29th and 30th and at the close of the month the temperatures were above normal over nearly all portions of the country. The average temperatures for the last decade were below normal over the greater part of the country, and over the northern portions from the Lake region to the Rocky Mountains and in the middle Mississippi Valley they were 10° to 15° lower than the normal.

As a whole, the average temperature for the month did not depart greatly from the normal in any district, the large excess in temperature during the first half of the month in some sections being largely or entirely overcome by the severe cold of the latter half.

Day temperatures were moderately high in the far Northwest about the end of the first decade of the month and along the Atlantic coast about the end of the second decade, but no previous high records were broken. In southern Florida only did the maximum temperatures exceed 80°, while at some points in North Dakota they did not go above the freezing point during the month.

Freezing temperatures prevailed at some time during the month over all portions of the country save in central and southern Florida, over southwestern Arizona, and the lower elevations of California, and along the immediate Pacific coast.

Precipitation.—During the first few days of the month generally fair weather prevailed throughout the country save for light snowfall from the region of the Great Lakes eastward and local rains in Florida and along the Pacific coast. However, on the morning of the 5th a trough of low pressure extended from Lake Superior southwestward into New Mexico, and precipitation had set in over the Mountain region of the West, which, during the following day or two, extended over all districts to the eastward. No unusually heavy precipitation occurred in connection with this storm, although some comparatively heavy falls were recorded in the South Atlantic and east Gulf States, also in New York.

With the passing of the storm above referred to, no precipitation of importance occurred until early in the second decade, when snows and rains set in generally over

the eastern half of the country, with heavy rainfall in the Middle and South Atlantic and east Gulf States, accompanying a low-pressure area of considerable energy that moved from the Gulf to New England. From the 15th to the 17th a depression moved from the far Southwest to the upper Lake region, and during the following day or two a second disturbance moved northeastward from the Gulf of Mexico, while still another, following closely in succession, moved from the Northwest to the Ohio Valley, and thence northeastward. As a result of this storm activity general rains and snows continued over practically all eastern districts during the last half of the second decade.

Pressure changes continued rather marked, and stormy weather was prevalent over much of the country during the third decade, and considerable precipitation occurred, especially over eastern districts and the far West. The pressure was particularly low along the Pacific coast near the close of the month, causing unusually heavy falls of rain in southern California and southwestern Arizona, and probably heavy snow in the mountain districts of those and the adjoining States, as the storm passed inland. At the close of the month this disturbance had moved eastward to the Mississippi Valley, attended by snow and sleet in the North Atlantic States and the region of the Great Lakes, snow in the upper Mississippi Valley and middle Plains States, and rain throughout the central and southern districts, while at the same time another storm was approaching the north Pacific coast, accompanied by general rains in the coast States.

The totals for the month were in excess of the normal in most districts from the Plains region eastward, the amounts being particularly heavy over most of the east Gulf and Atlantic coast States, where from 6 to 8 inches occurred. The monthly totals were likewise heavy in California and southwestern Arizona, and were in excess of the normal very generally over the southern Rocky Mountain region also, but in most other districts west of the mountains, as well as in portions of Texas and Oklahoma, the amounts were comparatively small and less than the monthly normals.

Over the central districts east of the Rocky Mountains the monthly amounts ranged from about 1 inch in the central Plains States to 4 or 5 inches over the Appalachian Mountain region, while to the northward they ranged from less than one-half inch in the Dakotas to about 2 inches in the lower Lake region.

Snowfall and ice.—During the first few days of the month there was a general increase of several inches in the depth of snow over the Lake region; elsewhere there was little change until near the end of the first decade, when the warm weather and general rains caused, except in the upper Lake region, a considerable reduction in the snow depth, several inches disappearing from districts in Iowa and southern Minnesota, and eastward to the Lake region, and from central Pennsylvania northeastward to New England.

The storms during the second decade caused an increase in the snow depth over portions of New England, New York, the upper Lake region, and thence westward to the Dakotas, and from Iowa southwestward to southern Kansas. Likewise there was a considerable increase in the depth over the Mountain and Plateau regions of the West.

The third decade was, as a whole, stormy and the heaviest general snowfall probably occurred in connection with the storm that moved from the central Rocky Mountain region southeastward to the Mississippi Valley and thence to the Lake regions, on the 21st and 22d. During this time snow fell over nearly all central and northern districts from the Rocky Mountains eastward, except near the middle Atlantc coast, causing a considerable increase in the depth from the middle Mississippi Valley eastward over the northern drainage of the Ohio and in the lower Lake regions, locally in Montana and Wyoming, and over the eastern slopes of the Rocky Mountains from Colorado northward. Elsewhere in the mountain districts of the West there was little snowfall during this period.

Although temperature changes were frequent during the month they caused little variations in ice thickness until near the close, when a severe cold wave caused an increase in the thickness over all districts from which ice was reported.

At the close of the month the Missouri River was gorged at St. Joseph, and heavily ice covered from thence to its source. Likewise in the Mississippi there was ice as far south as Cairo, and the upper portions of the river were icebound. Practically no ice had formed in the Ohio, and none on the main streams of the Atlantic coast south of the Hudson, while in New England practically all streams were icebound.

GENERAL SUMMARY.

Unlike the preceding month, January, 1915, was nearly uniformly warm and pleasant during the first half of the month and favorable for such farming and other operations as are possible during the winter season. The latter part of the month, however, was moderately cold, especially over the northern districts, and there was much cloudy weather with frequent rains and considerable snow in the central and eastern portions of the country as well as in the far Southwest and over the middle and southern Pacific coasts.

Maximum wind velocities, January, 1915.

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
		Mi./hr.				*Mi./hr.*	
Block Island, R. I.	12	74	ne.	Norfolk, Va.	13	64	nw.
Do	13	72	ne.	do	20	57	w.
Buffalo, N. Y.	2	60	w.	North Head, Wash.	2	64	se.
Do	7	80	sw.	do	7	50	s.
Do	8	56	sw.	do	10	74	se.
Do	19	63	sw.	do	11	62	se.
Do	23	54	sw.	do	13	60	se.
Do	29	50	sw.	do	14	60	nw.
Canton, N. Y.	7	53	w.	do	15	54	nw.
Do	19	56	sw.	Philadelphia, Pa.	12	60	ne.
Cheyenne, Wyo.	12	66	w.	do	13	51	ne.
Do	13	60	w.	Pt. Reyes Light	5	50	s.
Do	14	58	w.	do	8	70	nw.
Detroit, Mich.	7	50	nw.	do	11	59	sw.
Duluth, Minn.	17	58	nw.	do	14	54	nw.
Eastport, Me.	13	51	ne.	do	15	62	nw.
El Paso, Tex.	15	56	sw.	do	27	62	s.
Galveston, Tex.	31	64	s.	do	28	61	s.
Hatteras, N. C.	12	53	w.	do	31	50	s.
Do	12	56	w.	Providence, R. I.	13	60	ne.
Mt. Tamalpais, Cal.	8	60	nw.	Sand Key, Fla.	11	50	w.
Do	11	54	sw.	Sandy Hook, N. Y.	7	64	se.
Do	14	54	nw.	do	12	74	ne.
Do	15	51	ne.	do	13	70	ne.
Do	16	58	n.	do	19	50	s.
Nantucket, Mass.	12	65	ne.	Tatoosh Island, Wash.	5	53	e.
Do	13	78	ne.				
New Haven, Conn.	13	53	ne.	do	14	54	w.
New Orleans, La.	31	51	se.	do	20	54	e.
New York, N. Y.	3	66	nw.	do	21	60	e.
Do	6	60	se.	do	27	55	e.
Do	7	84	s.	do	29	60	e.
Do	12	56	ne.	Toledo, Ohio	7	51	sw.
Do	13	60	n.	Trenton, N. J.	6	52	se.
Do	18	51	s.	do	12	70	ne.
Do	21	54	nw.	do	13	62	ne.
Do	23	50	sw.				

In the winter-grain-growing States the ground was largely snow covered, especially during the colder weather of the latter half of the month, and wheat and other grains as well as young clover were well protected thereby. The snow fell as a rule without serious drifting and on melting should furnish an excellent supply of moisture for the growing plants.

In the trucking regions of the South cold weather delayed growth somewhat, and in most sections outdoor work was much delayed by the wet condition of the soil. No serious damage to fruit or truck occurred on account of frost, but the continued wet weather was unfavorable.

On the great cattle ranges of the West the weather was mostly favorable and stock was reported as in good condition, and on account of the absence of deep snow ranges continued to furnish feed in many sections.

In the mountain regions of the West the deficiency in the snowfall over the northern districts continued, and the amount stored in the high ranges is still much below the normal. In the mountains of California and in portions of Oregon, Arizona, New Mexico, and Utah there was considerable snow, and there were unusually heavy rains in southern California and the lower elevations of Arizona and western New Mexico. These have added very materially to the water supply and greatly improved the outlook for the coming crop season.

In California a good crop of citrus fruits was harvested.

Average accumulated departures for January, 1915.

Districts.	Temperature.			Precipitation.			Cloudiness.		Relative humidity.	
	General mean for the current month.	Departure for the current month.	Accumulated departure since Jan. 1.	General mean for the current month.	Departure for the current month.	Accumulated departure since Jan. 1.	General mean for the current month.	Departure from the normal.	General mean for the current month.	Departure from the normal.
	°F.	°F.	°F.	Ins.	Ins.	Ins.			P. ct.	P. ct.
New England	28.9	+4.5	.....	5.55	+2.10	.....	6.3	+0.4	79	+ 3
Middle Atlantic	34.7	+3.1	.....	5.14	+1.90	.....	7.0	+1.2	78	+ 2
South Atlantic	45.5	+1.3	.....	5.62	+1.70	.....	7.8	+2.5	77	0
Florida Peninsula	63.7	0.0	.....	5.39	+2.70	.....	6.8	+2.0	80	− 1
East Gulf	46.7	−0.7	.....	7.14	+2.10	.....	5.8	+0.1	76	− 2
West Gulf	46.1	−0.1	.....	2.60	−0.30	.....	5.8	+0.5	74	− 2
Ohio Valley and Tennessee	32.7	−0.5	.....	4.67	+0.80	.....	7.2	+0.8	79	+ 2
Lower Lakes	24.6	+0.3	.....	3.25	+0.60	.....	7.4	0.0	81	0
Upper Lakes	18.2	0.0	.....	1.72	−0.20	.....	7.5	+0.6	83	0
North Dakota	6.3	+2.2	.....	0.23	−0.40	.....	5.9	+1.0	84	+ 4
Upper Mississippi Valley	20.8	−0.7	.....	2.08	+0.40	.....	6.3	+0.9	83	+ 5
Missouri Valley	22.6	+1.6	.....	1.61	+0.60	.....	5.7	+0.7	82	+ 7
Northern slope	19.7	+0.7	.....	0.72	−0.60	.....	5.8	+0.7	75	+ 5
Middle slope	30.8	+1.8	.....	0.85	+0.10	.....	4.8	+0.7	71	+ 4
Southern slope	40.4	−1.1	.....	1.02	+0.30	.....	4.3	−0.1	66	0
Southern Plateau	37.6	−3.1	.....	1.66	+0.90	.....	4.0	+0.6	64	+14
Middle Plateau	26.2	−1.6	.....	0.83	−0.20	.....	5.6	+0.5	71	+ 1
Northern Plateau	27.3	−1.5	.....	0.80	−0.80	.....	7.4	+0.7	78	− 2
North Pacific	40.7	+1.3	.....	5.39	−1.30	.....	7.2	−0.3	83	− 2
Middle Pacific	47.5	+0.3	.....	7.41	+2.70	.....	6.3	+0.7	79	− 2
South Pacific	52.5	+1.6	.....	5.06	+2.30	.....	5.2	+0.7	72	0